

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A system for management of a multi-level railway system and its operational components, the railway system comprising:

a first processor associated with a railroad infrastructure level configured to control an operation of a railroad infrastructure ~~operating within the railroad infrastructure level~~;

a second processor associated with a railroad track network level configured to control an operation of a railroad track network ~~within the railroad track network level~~, wherein the railroad track network level is a sub-level of said railroad infrastructure level;

a third processor associated with a train level configured to control an operation of a train ~~operating within the train level~~, wherein the train level is a sub-level of said railroad track network level;

a fourth processor associated with a consist level configured to control an operation of a consist of a train ~~within the consist level~~, wherein the consist level is a sub-level of said train level; and

a fifth processor associated with a locomotive level configured to control an operation of a locomotive ~~within the locomotive level~~, wherein the locomotive level is a sub-level of said consist level;

~~each processor associated with each level being configured to provide to the processor associated with at least one other level operational parameters that define operational characteristics and data related to the level with which it is associated; and~~

~~each processor optimizing the operation within its associated level and to cooperate with a processor associated with at least one other level to optimize an operation of the multi-level railway system across all the levels of the railway system.~~

each processor associated with each level receiving input data defining operational characteristics and performance data for the associated level wherein each processor is responsive to the received input data to generate output instructions, and wherein each processor controls the operation in the associated level in accordance with the generated output instructions; and

each processor further generating operating commands and parameter data and providing the generated command and parameter data to a processor associated with at least one other level, and wherein the processor associated with the at least one other level is responsive the received generated operating commands and parameter data to control an operation across all the levels of the railway system as a function of the generated command data.

Claim 2 (canceled).

Claim 3 (currently amended): The system of claim 1 wherein the input data received by the first processor associated with the railroad infrastructure level receives includes one or more of:

railroad infrastructure data;

railroad track network data; and

train data; and

controls an operation of a railroad infrastructure within the railroad infrastructure level based ~~at least in part~~ on the received infrastructure data, the railroad track network data, and the received train data.

Claims 4 -7 (canceled).

Claim 8 (currently amended): The system of claim 1, wherein the output instructions generated by ~~in which~~ the first processor associated with a railroad

infrastructure provides includes ~~output instructions including one or more of:~~
infrastructure optimization instructions, and wherein the generated commands include
commands to a railroad track network[[:]] and commands to a train.

Claims 9 -13 (canceled).

Claim 14 (currently amended): A multi-level system for management of a railway system and its operational components, the railway system comprising:

a first level configured to ~~optimize~~ control an operation within the first level, said first level including first level operational parameters defining changes in operational characteristics and data of the first level over a period of time; and

a second level configured to ~~optimize~~ control an operation within the second level, said second level including second level operational parameters defining changes in the operational characteristic and data of the second level over a period of time, wherein the second level is a sub-level of said first level;

said first level providing the second level with the first level operational parameters, and the second level providing the first level with the second level operational parameters; and

said optimizing controlling the operation within the first level and said optimizing controlling the operation within the second level each being a function of optimizing a system the first and second level operational parameters optimization parameter.

Claim 15 (currently amended): The system of claim 14 wherein the system optimization parameter is first level operational parameter and the second level operational parameter are indicative of fuel usage in the railway system.

Claim 16 (currently amended): The system of claim 14 wherein the system optimization parameter is an first level operational parameter and second level

operational parameter are indicative of an economic valuation of the time of delivery of cargo carried in the railway system.

Claim 17 (original): The system of claim 14 wherein the operational parameters are provided from one level to the other at predetermined intervals.

Claim 18 (previously presented): The system of claim 14 wherein the operational parameters are indicative of predetermined changes in conditions over the period of time.

Claim 19 (original): The system of claim 18 wherein the operational parameters are indicative of a rate of change in the conditions.

Claim 20 (original): The system of claim 19 wherein the rate of change is with respect to time.

Claim 21 (original): The system of claim 19 wherein the rate of change is the change in one condition with respect to another.

Claim 22 (original): The system of claim 14 wherein an extent of compliance of the second level with the system optimization parameter is communicated periodically from the second level to the first level for adjusting the first and second level operational parameters based thereon.

Claim 23-25 (canceled).

Claim 26 (currently amended): The system of claim 22 wherein optimizing controlling the operation within the first level and optimizing controlling the operation within the second level includes identifying key operating constraints and data at one of the first and second level

and communicating these constraints and data to another of the first and second level to ~~optimize~~ improve performance of the operation at the another level.

Claims 27-49 (canceled).

Claim 50 (currently amended): A system for management of a multi-level railway system and its operational components, the railway system comprising:

a first level including first level operational parameters defining changes in operational characteristics and data of the first level over a period of time; and

a second level including second level operational parameters configured to ~~optimize control~~ an operation within the second level as a function of the first level operational parameters and second level operational parameters and wherein the second level operational parameters are indicative of changes in operational characteristics and data of the second level over a period of time, wherein the second level is a sub-level of said first level; and

said second level providing the first level with ~~optimized~~ second level operational parameters, and wherein said first level determines the first level operational parameters as a function of the provided second level operational parameters.

Claim 51 (canceled).

Claim 52 (currently amended): The system of claim [[51]] 50 wherein the ~~system optimization parameter is~~ the first and second level operational parameters are indicative of a change in fuel usage in the railway system.

Claim 53 (currently amended): The system of claim [[51]] 50 wherein the ~~system optimization parameter is~~ the first and second level operational parameters are indicative a change in an economic valuation of the time of delivery of cargo carried in the railway system.

Claim 54 (currently amended): The system of claim 50 wherein the second level operational parameters are provided from the second level to the first level at predetermined intervals.

Claim 55 (original): The system of claim 50 wherein the second level is a portion of the first level.

Claim 56 (original): The system of claim 51 wherein the system operational parameter is indicative of a rate of change in second level operational parameters.

Claim 57 (original): The system of claim 56 wherein the rate of change is with respect to time.

Claim 58 (original): The system of claim 56 wherein the rate of change is the change in one condition with respect to another.

Claim 59-61 (canceled).

Claim 62 (original): The system of claim 50 wherein the first level monitors whether or not the optimized second level operation is within predetermined limits.

Claims 63-75 (canceled).